AMENDMENTS TO THE DRAWINGS:

A replacement set of drawings is attached. An additional sheet of drawings includes FIG. 10A and FIG. 10B as per Examiner request for addition drawings covering an aspect of the claim. Each is marked as a "replacement sheet" in the header. Support for the material in the new figures is found in the claims themselves and the specification.

The additional figures are added in response to the request by the Examiner. No new material is being added by the inclusion of this material.

Attachment: Replacement Sheets

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested in view of the foregoing amendments and discussion presented herein.

1.   Objection to Drawings.

The Examiners objections to the drawings have been noted, and a set of substitute formal drawings are enclosed with the addition of FIG. 10A and FIG. 10B.

The addition drawing is based on the claims and fully supported by the material in the original specification - no new matter has been added.

2.   Specification Amendment.

The specification has been amended to correct typographical errors, and to accommodate the above described additional sheet of drawings.

3.   Allowability of Claim 67.

The Applicant notes with appreciation the Examiner's determination that Claim 67 would be allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claims.

In response Applicant has added independent Claim 85 which combines claim 67 combined with parent claims 66, 65, 63, 62, and independent claim 61.

4.   Rejection of Claims 79-84 under 35 U.S.C. §112.

Claims 79-84 were rejected as failing to comply with the written description requirement. It is contended that the claims contain subject matter which was not described in the specification.

Claim 79.   This claim was amended to recite "wherein said programming operation is performed in response to receiving an external optical programming signal while said display element is in a programming mode which loads an address received in parallel by the display element as said first address into said memory."

Support is found in the specification, including

page 23, lines 4-8: "Upon receiving a load pulse (when the programming voltage is set to high - connection of programming voltage not shown), the data being output by the counter is loaded into the non-volatile memory which sets the address for the USLED. This allows address programming to be performed in-situ after the array of display elements have been assembled onto a power plane backing."

page 11, lines 3-6: "When a sufficient light level impinges on a USLED which is in programming mode, then the counter value is programmed as an address into a non-volatile memory within the USLED".

page 6, lines 14-16: "One aspect of APA on USLEDs involves a technique of in-situ optical programming wherein the USLEDs are programmed from an optical source array (generally a matching, or a superset, of the target USLED array) which programs

a position address into each USLED on the target array."

Claim 80.   This claim depends from Claim 79 and recites the programming signal as comprising an optical signal as recited previously in claims 7 and 65.   Support is found for the amended claim throughout the specification including page 6, lines 11-18.

Claim 81.   This claim depends from Claim 47 and recites the use of non-volatile memory for retaining said first address in said memory as recited previously in original claims 2 and elsewhere, including at page 18, lines 16-19.

Claim 82.   This claim depends from Claim 58 and further recites how the driver circuit can provide analog or digital intensity control as recited in previous claim 30, and elsewhere, including page 8, line 22 through page 9, line 2.

Claim 83.   This claim depends from Claim 47 and recites how circuitry including the optical element are contained on the same integrated circuit die. Applicant has amended the claim to more closely match the wording of the specification. Support is found at page 12, line 21 through page 13, line 5:

"Preferably, the circuitry according to the present invention is incorporated within the display element itself so that a single universal scanning element is created. The techniques and described circuitry can be used with any form of display element such as LEDs, laser diodes, infrared diodes, incandescent lights and so forth. The circuitry may be incorporated within the die of a display LED, or it may be provided as an integrated circuit die to which one or more display elements is bonded such as by a

"Flip-Chip" method, or another such means."

Claim 84. This claims depends from Claim 47 and has been amended to recite

the inclusion of red, green and blue display optical elements. Support for which is

found in the specification including: page 17. lines 15-16: *"One embodiment 10 of a*

USLED is exemplified in FIG. 2, having been integrated with a red, green, and blue

LED display element." page 13, line 10 through page 14, line 4.

Each of the claims in this group of claims finds support in the specification as

indicated.

5.   Rejection of Claim 71 under 35 U.S.C. §112.

Claim 71 was rejected as being indefinite, in particular with regard to the phrase

"second address in-situ", and what the phrase *"address in-situ"* means according to the

specification.

Claim 71 was amended to more clearly recite the relation of the second address

and in-situ aspect. Specifically the amendment includes: " for programming said

second address within said means with the display element connected in-situ on the

target array".

Support is found throughout the specification for programming an address

internal to the device (second address) for comparison with a current count value. The

term in-situ is used throughout the specification. Specifically, refer to page 6, lines 13-

17: *"One aspect of APA on USLEDs involves a technique of in-situ optical*

programming wherein the USLEDs are programmed from an optical source array

(generally a matching, or a superset, of the target USLED array) which programs a

position address into each USLED on the target array."

Therefore, the in-situ nature of the claim has been clarified, wherein the claim is in a condition for allowance.

6.   Objection to the drawings under 37 CFR. § 1.83(a).

The drawings have been objected to for not showing every feature which is claimed. Applicant is uncertain what claim and what aspects Examiner does not consider to be in the drawings. Examiner has included a large string is text commencing with *"a display element"*, "and many other aspects which are shown in the schematics of the instant application.

In order to comply with the Examiner and expedite the examination process Applicant has added FIG. 10A and FIG. 10B to the set of drawings which include steps corresponding to those mentioned by the Examiner, as well as an amendment to the specification to indicate the inclusion of, and describe the blocks of, the new figures. These two figures represent basic steps in programming the device (loading first address into memory), and in operation in which a second address is found matching the first address and data bits from the input signal are latched for output by the device.

Support for these aspects of the invention are scattered throughout the specification, including the following sections which are duplicated below for Examiner convenience.

page 9, lines 6-7:

"An array of unprogrammed USLEDs are first attached between power and ground which is connected to an APA controller."

page 6, line 11 to page 7, line 17:

"The USLEDs of the present invention incorporate what is being referred to herein as Array Position Addressing (APA) which allows the elements to be controllable addressed without the need of individual row and column lines. One aspect of APA on USLEDs involves a technique of in-situ optical programming wherein the USLEDs are programmed from an optical source array (generally a matching, or a superset, of the target USLED array) which programs a position address into each USLED on the target array. After programming, each display element retains, such as in FLASH memory, the address within the array that it is to be responsive to. A display array which is implemented according to the present invention contains a collection of programmable display elements, such as USLEDs, which are attached to a surface or backplane containing a power plane and a ground plane. During operation of the display, a drive voltage is applied between the power and ground plane that contains a superimposed serial APA control signal. The APA control signal comprises cycles within which, one or more data bits are contained for each element. A simple On/Off element requires only a single bit of intensity data while an RGB element may utilize twenty-four or more bits for color and intensity selection. Each display element monitors the serial signal pattern on the backplane and it receives its operating instructions at the address within the signal. Thereafter, such as at the end of a signal cycle wherein every display element has received a command, the display elements commence to display the desired state, by utilizing power from the backplane and modulating their own intensity/color based on the information received in the serial signal on the backplane. It will be appreciated that a display may contain display elements which are connected to receive different serial signals, so that the update rate of the display may be increased or to match certain signal receipt characteristics. For example, a large color display may incorporate

different colors of elements, such as Red, Green, Blue, which may each be connected to a different power and signal plane within the backplane so that the update rate of the entire display can be tripled. It will be appreciated that the display elements may be divided in different ways from separate signals without departing from the teachings of the present invention."

page 22, lines 14-16:

"The output of the comparator drives the load signal for programming the non-volatile memory of the counters to the current count value."

page 25, lines 1-2:

"...representative of the APA signal which shows large square wave pulses for reset and pulses for the column and row clocking."

7.   Rejection of Claim 70 under 35 U.S.C. § 102(b).

Claim 70 is rejected in view of Sharma (U.S. Patent No. 6,157,366).

In support of the rejection Examiner relies on fig. 1, (101, 106) and fig. 2 (205, 210), (206, 211). However, no statements are made as to how these elements anticipate the elements recited in Applicants Claim 70.

However, the teachings of Sharma do not comport with those taught by Claim 70, and the recited elements can not be equated with aspect of the invention as claimed.

First, it should be understood that Sharma does not teach a "display element" as that term is known according to the invention. Instead Sharma teaches a block memory control circuit as can be seen from the title and the first line of the abstract.

Sharma describes the object of the invention relating to the movement of blocks

of data for display on a display screen, referring to col. 2, lines 30-35 of the background

in Sharma:

> "*Thus, the need has arisen for improved circuits, systems, and methods for*
>
> *controlling the display of blocks (windows) of data on a display screen. In*
>
> *particular, such circuits, systems, and methods should eliminate the inefficiencies*
>
> *found in the word-by-word memory transfers found in currently available*
>
> *systems.*"

It will be readily recognized that the instant application is not a block memory

move control circuit, nor is it directed toward eliminating the inefficiencies of word-by-

word transfers. The preamble of Applicant's claim itself sufficiently breaths life into the

claim to overcome Sharma.

In addition, the elements referred to for support within Sharma are a CPU 101

and a conventional CRT (cathode ray tube) 106 in fig. 1. A conventional CRT certainly

cannot be equated with an single LED unit for incorporation within a display array. It will

be recognized that a CRT is adapted with circuitry for magnetically driving the

movement of the electron beam onto the phosphor.

Sharma also does not address with regard to fig. 2 (205, 210), (206, 211) how to

drive individual display elements within an array of display elements. The Examiner

has not described in the required detail how these aspects read on the claim. But it can

be readily seen from reading the Sharma reference that elements 205, 206, 210, and

211 in Sharma figure 2 are all registers for establishing the window edges for a block

move and have no relation whatsoever to "*matching a first address received from the data signal with a second address programmed within said means to the position of the display element within an array of the display elements*". There is not an array of display elements being controlled by Sharma and no mechanism by which addressing is determined from the incoming data signal and compared with a second address programmed internally to the position of the display element.

Although clearly not anticipated by the reference, Applicant has made a slight amendment to Claim 70 to indicate the nature of the data signal being received, as this data signal is received in common by all the display elements in the array (readily seen from FIG. 5 of instant application).

Therefore, as Sharma is not directed to similarly purposes, does not have a similar structure and does not teach elements which comport to the aspects of Claim 70, it does not anticipate that claim. Wherein it is respectfully requested that the rejection of Claim 70 and the claims which depend therefrom be withdrawn.

8.   Rejection of Claims 16-18, 21-26, 47-50, 57-59, 61-66, 68-72, 77 and 78 under 35 U.S.C. §103(a).

Claims 16-18, 21-26, 47-50, 57-59, 61-66, 68-72, 77 and 78 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Sharma (U.S. Patent No. 6,157,366) in view of Suzuki (U.S. Patent No. 5,734,361).

After carefully considering the grounds for rejection the Applicant responds as

follows. Before proceeding into a detailed point by point analysis, a number of points

should be made generally about the rejection.

(1) Invention Not Considered as a Whole. It should be noted that the nature of

the rejection is not directed toward considerations of the whole, but instead is directed

toward an attempt to assemble a system from a collection of parts. To wit, the second

paragraph of the rejection leads off with "Sharma has failed to disclose a latch circuit, a

drive circuit, and a data signal modulator the output data signal", whereinafter the

Examiner looks toward Suzuki to supply these elements. Patentability is not based on

whether a collection of elements exists, but on the nature of how those elements are

assembled, what principles of operation are met, and what purposes are served. While

further assemblage of any combination of references is to be suggested by the

reference, herein it is clearly for the purpose of supplying elements that Examiner was

unable to find in Sharma.

(2) Different problems and principles of operation. Different principles of

operation are utilized and the relied upon references solve different problems, and

neither problem is that which is solved by the Applicant.

As mentioned with regard to Claim 70 Sharma discloses an object for performing

block data moves within a display memory, it relies upon a principle of memory data

moving from frame memories to one of four blocks within a display memory (fig. 2,

201a-201d; fig. 4 windows A-D; FIG. 3, 301a - 301d). Sharma does not even disclose

the actual display driving mechanisms, these being inherent within the conventional

CRT relied upon, such as seen in fig. 1, element 106 of Sharma.

The Suzuki reference is also drawn to different purposes and operating principles. It can be seen clearly from FIG. 4, FIG. 8, FIG. 12A, FIG. 12B, FIG. 16, FIG. 25, FIG. 27, FIG. 32, and FIG. 34 that Suzuki describes a display mechanism using a row and column matrix addressing scheme. This principle of operation is directly taught against by the applicant. The object of Suzuki is to control the intensities of the pixels within a electron beam based display panel using row and column drive.

Therefore, there is no commonality between Suzuki and Sharma with regard to either principle of operation, or objects of their invention. Furthermore, neither has any commonality to those put forth by the applicant.

(3) No Suggestion or motivation found in references. The only suggestion or motivation that could direct one to even attempt such a combination could only come from Applicant's invention, since the relied upon references have different objects and principles of operation than the instant application. Generalized statements of both the combination and its benefit are not held as sufficient by the courts to establish *Prima Facie* obviousnes..

MPEP 2143.01 Suggestion or Motivation To Modify the References [R-1]

THE PRIOR ART MUST SUGGEST THE DESIRABILITY OF THE CLAIMED INVENTION
"There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a prima facie case of obvious was held improper.).

The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." In re Fitch, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), citing In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. Appeal No. 97-0315 Application 08/336,181 -6-1984).

(4) Any of the above problems in themselves should be sufficient to overcome the support for the rejection. The rejection, however, suffers from a number of shortcomings, including: non-analogous art, applicant alone discovered the source of the problem, all claim limitations are not taught, modification based on hindsight in view of applicant's teaching, new principle of operation utilized, solved a different problem, new and unobvious results, lack of specificity of suggestion to modify, "plain meaning" of recited elements ignored, elements in references are not equivalent, references do not add up to the invention, unworkable combination, useless combination, impossible to combine, proposed combination renders reference unsuited for intended purpose, no need of element within references, unsuggested combination, no motivation to combine, obvious to try is not a standard of obviousness, invention to be considered as a whole, reference teaches away from invention, and that No Prima Facie Case of Obvious has been established.

The following will discuss each group of specific claim rejections in greater detail.

<u>Claims 16, 25, 47, 50, 57-59, 61-64, 69, 72</u>. Claims 16, 47, 61, 69 are the independent claims within this group of claims.

Examiner makes a number of incorrect assertions regarding the teachings of Sharma. These assertions are not properly formed in that each is required specify what

specifically is found in the reference which specifically relates to a claimed aspect.

However, only locations in the references are put forth - there is no description provided

in the rejection as to how these supposedly equate.

First and foremost it is said that "*Sharma discloses a display comprising*"; when

the only "display" taught by Sharma is display 106 in fig. 1 (a CRT) for which internal

circuitry is not even described. The rejection goes on to said that Sharma comprises "*at*

least one optical display elements integrated within a display element". Recitation is

noted with "Abstract", however, again there is no mention as to how that supposedly

exists within Sharma - the abstract of Sharma makes no such assertions but describes

controlling block moves in a frame buffer.

The sections of Sharma relied upon do not properly describe any of the claims

elements recited by the Applicant. These sections describe moving blocks in a frame

buffer and how a conventional raster scan display uses data generated from bits

contained in the frame buffers. There is nothing which comports to *"receiving an array*

position addressing signal", *"counter for maintaining an array position count"*, *"memory*

for retaining an array position", *"means for extracting output data from a data signal*

received in parallel by the display element in response to matching second address",

and so on. Sharma has only incidental similarities with elements recited in Applicant

claims.

Then the rejection indicates that Sharma does not disclose "*a latch circuit, a*

drive circuit and a data signal modulator" and puts forth a combination with these

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elements within Suzuki "*since this will allow an efficient and an accurate optical driving method*".

There is no teaching as to how these elements can be combined to teach applicants invention, nor could there be, as they cannot be combined. Suzuki teaches row and column driving of a display which is what Applicant's invention is teaching away from as seen from page 6, lines 4-8 of the instant application: "*A prime advantage of USLEDs is that they may be arranged into arrays without the need of row and column drivers, and furthermore they do not require a complex backplane containing separate row and column lines.*"

In addition, numerous aspects of the claims have not even been mentioned but lumped into the above generalizations. For obviousness to be supported each claim element must be given proper weight.

<u>Claims 17-25, 48-49, 54-56, 59-60, 62-66, 68, 71, 77-79</u>. These claims depend from the above independent claims, as well as independent Claim 70 described earlier.

Each of these dependent claims should be considered *a fortiori* allowable in view of discussion about the patentability of their respective base independent claim. However, it should be noted that in the discussion of these dependent elements the rejection again resorts to a piecemeal examination approach. By way of example, with regard to claims 17, 54 it is said that Sharma discloses that "*the input comprises a single line coupled directly to each display element (fig. 1 (101, 105))*"; however, what is seen in the figure is a data flow between a CPU 101 a frame buffer display controller

107 and a CRT 106. Clearly a CRT does not comport to separate display elements coupled in an array as described by the applicant. The rejection ignores the remainder of the base claims which describe the invention as a whole and focuses on an element out of context. This pattern continues with all the dependent claims. In supporting the rejection of claim 18 it is indicated that Suzuki discloses "*a shift register coupled to said input (fig. 8 (203,204) and configured to output the data to said latch*". The mere fact that Suzuki uses shift registers and latches is immaterial. Suzuki uses these elements for different purposes with different principles of operation. The dependent claim is again not considered in light of the independent claim upon which it is based. Numerous of these dependent claims contain material which would render them patentable combined with parent claims, even if the parent claims themselves were not patentable.

Therefore, no prima facie case of obviousness has been made and clearly the references are not combinable, nor add up to the invention, wherein Applicant respectfully requests that the rejection of independent Claims 16, 47, 61, 69 and the claims which depend therefrom, should be withdrawn.

9.   Amendment of Specification.

The Applicant has amended the specification to include material associated with the additional figures 10A, 10B which were added to aid comprehension of the invention and whose inclusion was required by the Examiner. This text is not deemed

to add any new material to the specification.

10.   Amendment of Claims 70-72, 79-81, 83-84.

Claim 70.   Independent Claim 70 was amended to include additional clarification of the nature of the "data signal", specifically as being "common to all display elements in the array. Support is found throughout the specification, and is perhaps most readily seen in FIG. 5.

Claim 71.   Dependent claim 71 has been amended to more clearly describe the in-situ aspect as required by the examiner.

Claim 72.   Dependent claim 72 was amended to improve clarity with regard to how the display elements receive the data signal. Amendment is based on page 7, lines 4-5: "*Each display element monitors the serial signal pattern on the backplane and it receives its operating instructions at the address within the signal.*"

Claim 79.   Dependent claim 79 was amended to instantiate the use of the external programming signal as being of an optical nature. The limitation of the signal being received in parallel, is recited more clearly in that it is *"received by the display element, in parallel with other display elements within an array of said display elements"*.

Claim 80.   Dependent claim 79 was amended to describe in more detail about the programming signal, which now indicates that it is "configured for establishing an array position address into each of the display elements contained within an array of

display elements". Support is found throughout the specification including page 6, lines 11-18.

Claim 81. Dependent claim 81 was amended to eliminate some unnecessary limitations with regard to the memory.

Claim 83. Dependent claim 83 was amended to recite from the specification an embodiment of constructing the display element, specifically: "*incorporated within the die of an optical element, or on an integrated circuit die to which one or more optical elements are bonded*". Support is found in the specification, such as at page 12 line 21 through page 13, line 12.

Claim 84. Dependent claim 84 was amended to recite the inclusion of multiple optical elements, specifically those of red, green and blue. Specifically, "*integrated with a red, green, and blue optical element* retained in said optical housing". Support is found in the other claims and throughout specification including page 17, lines 15-16.

11.   Addition of Claim 85.

Claim 85. Independent Claim 85 was added to include the content of Claim 67 (found to be allowable if rewritten in independent form) with the interceding claims 66, 65, 63, 62 and independent claim 61.

None of the above amendments have been made to overcome any grounds of rejection.

12.   <u>Additional Claim fees</u>.

No additional claim fees are required for added independent Claim 85, as the number of independent claims and total claims are still below the number which have been paid for in the application.

13.   <u>Extension of Time Petition</u>.

The Applicant has enclosed a petition for a three-month extension of time to respond to the Office Action and has enclosed the appropriate petition fee.
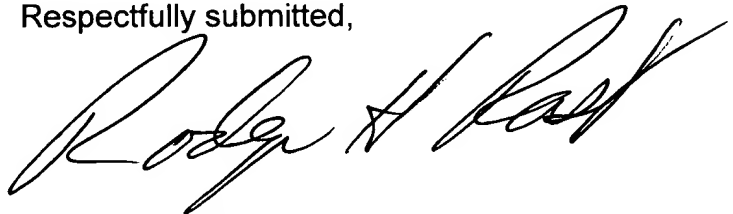
14.   <u>Conclusion</u>.

Each of these presently pending claims in this application are believed to be in immediate condition for allowance.

The Applicant respectfully requests a response/interview (email/phone) with the Examiner to clarify any issues that arise upon examination on the merits of the present application, if an allowance of all claims does not appear forthcoming.

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Respectfully submitted,

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